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ORGANIC GARDENING

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With The Editor

Orchard Practices

IS it possible to use the organic system exclusively in the fruit orchard? Can the use of chemical fertilizers there be abandoned? The answer is not only yes but the vicious practice of poison spraying also can be completely eliminated. The wonderful fruit of the old biblical days was not produced with poison sprays. Quality fruit was raised hundreds of years ago, long before sprays were known.

Talk to old-time farmers. Not only will they tell you that no chemicals of any kind were used but that the taste of the fruit then was more delicious. In the old days of mixed farming the soil was fertile enough to grow strong trees that could resist disease and insects. Sprays are used today because trees are grown under artificial conditions and they themselves have become artificial.

C. H. Lane a reader of Organic Gardening from Eureka, Kansas, writes us, "In my youth folks moved to Kansas. The country was just being settled. The soil was virgin. People were strong and healthy. There were no patent or factory foods. No insects ever bothered apples, peaches and pears. Spraying fruit trees was unknown. No worms or bugs bothered them."

Luther Burbank in *Partner of Nature* (Appleton-Century) said, "It has long been my belief that a solution of the problem of protecting our fruit trees from both insect and fungus pests must eventually be found in the development of immunity in the trees themselves, rather than in resort to such expedients as spraying and "gassing." In this regard we may well take a leaf from the note-book of the physician, who has learned that immunity to disease often depends more upon the condition of the patient than upon the presence or the absence of disease germs."

The fruit orchard represents the toughest problem on the farm, as far as changing over from the chemical to the organic system. In connection with ordinary crops you are starting anew from the seed, but in an orchard you have old weakened trees. It may take two, three or four years to rejuvenate them. If you tell a farmer that he could raise fruit without spraying he will look at you in a queer manner.

Let me first give you a few examples of the working of the organic method in relation to fruit orchard. The following is a condensed excerpt from an article in *Organic Gardening* by Helen L. Waite: "In 1933 we bought Ertoba Farm in Pennsylvania, 76 acres of basically good but sadly abused land. On the place was the disheartening remnant of what had once been a flourishing home orchard of approximately 50 trees, peach, apple, pear, plum and cherry. Unpruned and badly nourished for years, the trees were spindly in growth and at the time we took possession (July) covered with twisted wormy fruit and festooned

with ghostlike webs of tent caterpillars.

"The first year we left the orchard alone as uneconomical to handle, while considering some other projects, notably the starting of a poultry flock. To house this flock we moved a portable brooder house down under one of the pear trees, a barren Seckel pear.

"The flock consisted of approximately 200 to 250 chicks and clean chopped straw was used for their litter. It was our practice to use a relatively shallow litter and to change more frequently than is customary. We disposed of the straw and caught droppings by brushing them out through a trap at the back into a pit beneath the house which was protected from the chicks on range by a heavy screening around the foundation.

"At the end of the season the brooder house was moved to a new location and the matter forgotten except that the straw and dropping pile which had been decomposing in the shallow pit under the house appeared somewhat unsightly when exposed. It was turned a number of times in the months that followed without appreciably decreasing its bulk and the next year in the interest of neatness this rather crude compost heap was worked in around the base of the pear tree to a radius of approximately 6 feet.

"The following spring the pear tree was a bouquet of bloom in contrast to the poor showing of its neighbors. The tree set fruit early, showed little or no cast fruit (the ground around the other trees was covered early by drops) and bore a satisfactory crop of 5 bushels of well formed russet pears in the fall.

"So unwilling are we to learn or to correlate events logically that we considered this bounty was due to the fact that it was the "good" or bearing year of this particular tree. But when this crop was repeated the second and then the third year and fourth season while trees a few feet away on every side continued to have barren years indefinitely some idea of the value of organic composting and its use in orcharding began to penetrate.

"Sufficient to say this yield continued with some seasonal variation and in the fall of 1942 "THE PEAR TREE" bore its 7th consecutive crop of 6½ bushels of clean healthy satin-firm fruit that can be eaten full of sun directly from the tree without first being washed, brushed or de-poisoned.

"The general physical appearance of this tree is also worthy of note. In an orchard of thin rather pale trees afflicted with blight, mildew and caterpillars this pear is heavily leafed with a dark rich foliage and the bark is clean and apparently free of fungus."

Sir Howard in the "Testament" describes his experience with apple trees thus, "I have just obtained confirmatory results which prove how important humus is in helping a mycorrhiza-former—the apple—to throw off disease. In 1935 I began the restoration, by means of humus, of my own garden, the soil of which was completely worn-out when I acquired it in the summer of 1934. The apple trees were literally smothered with American blight, green-fly, and fruit-destroying caterpillars like the codlin moth. The quality of the fruit was poor. Nothing was done to control these pests beyond the gradual building up of the humus content of the soil. In three years the parasites disappeared; the trees were transformed; the foliage and the new wood now leave nothing to be desired; the quality of the fruit is first class."

Herbert C. White of Gardena, California, one of the readers of *Organic Gardening* writes us under

date of Aug. 31, 1944, "I am also enclosing a small photo of my peach tree. This was treated last June with a heavy application of partly composted material from one of my heaps and then heavily mulched with straw. I did not use any poisonous spray, or insecticides. The crop was perfect, with no sign of infection of any kind. I picked over three bushels of peaches from this young tree. I am through with all commercial fertilizers and poisonous sprays."

Rev. Robert W. Jones, Pastor of the First Unitarian Church of Memphis, Tennesssee, writes in the Memphis Press-Scimitar of May 20, 1944 as follows, "Sir Howard claims that the use of humus in agricultural practice will reduce the bug menace (including the cotton boll weevil) to an insignificant minimum. I have had experiences which support his thesis. I have been a mulcher from a way back. A mulcher is one who covers the ground between crops and around trees and bushes with leaves, grass, paper, etc. Mulch is humus in the making. Last year for example, I dried about 12 bushels of apples from two trees that have not been sprayed in 15 years. I don't claim that I did not have a bug in a bushel, but I can truthfully say that there were not many defective apples on the trees. For the past five years the trees have been mulched with orchard grass. No spraying, no fertilizer, no bugs but excellent apples. I have had a similar experience here in Memphis with potatoes."

A physician writing in the American Eagle of Estero, Florida in July, 1944 said, "I was taken to a farm recently to treat a sick friend, and as we drove through various orchards, my friend, a citrus grower, began talking about citrus groves. He pointed out the various ones that were fertilized with chemicals, how polluted the leaves were. Then he showed me extinct groves that had perished by certain diseases. "What disease?" I asked him, and he candidly replied, "Stupidity". "But they don't learn", he said, "for after thirty years, they still pour on the sulphur, brimstone and fire, and they plough deep, the deeper, the better, they say. Even in the dry season with such a lack of moisture, and even though they pump water, and more water, it is still too dry. They burn up everything around the plants; not even bacteria can live, far less earthworms. Look at my grove, the leaves are clean, the ground is 'dirty', sure; it is full of trash, humus, grass, leaves, all sorts of junk, but the earth is full of bacteria and earthworms. It is moist, mellow and lovely to handle. My fruit is sweet, and beautiful. I don't have to spray anything."

On my own farm I am nursing along a few older trees with compost and mulches. No poison sprays are used. An improvement can be seen in this second season but it will probably take several more years for their complete rehabilitation.

Here is the organic method in the orchard. It is best to first weed the ground clean underneath the tree, to about a foot or two beyond the drip-line of the branches. Then the soil should be given a good liming. This is especially helpful where chemical fertilizers have been used as the soil will be quite acid. But regardless of whether chemicals have been used or not, give the ground a strong lime treatment. A good way to do this is to make a lime water mixture and apply the lime in liquid form. This will enable it to quickly penetrate deeply.

The next thing to do is to spade in the compost in the top two or three inches of soil. Start a foot away from the trunk. There are no feeding roots there. Spread it to about a foot or two beyond the drip-line of the outer branches. A tree does not need too much fertilizer. A thin layer, less than one-half inch should be sufficient. Raw, unrotted manure should never be applied to a fruit tree. This is well illustrated in Farmers' Bulletin No. 1522 of the U. S. Dept. of Agriculture which says, "manure does not readily rot under Great Plains conditions, and the excessive application of manure may actually injure the trees. Such results are evident in one of the cultural experiments at the Northern Great Plains Field Station, where blocks of trees that have been manured heavily over a period of years are in weaker condition than those in clean-cultivated blocks or in blocks receiving other treatments." Of course there is all the difference in the world between raw manure and finished compost.

The next point is to place a heavy mulch under the tree at least a foot or more thick. This could be made of straw, spoiled hay, ground corn cobs, grass clippings, leaves, weeds, etc. There are many reasons for this mulch but the most important one is not to permit the grass to grow under the tree, thus competing with it for nourishment. Save all the food supply for the tree. In a series of tests at Pusa in India spectacular results were obtained where grass was not permitted to grow under fruit trees. In this case this was done by cultivation rather than mulching, but the effect should be more spectacular with mulching on account of its other advantages.

The mulch traps and stores rainwater and its bottom is practically always wet. It keeps the soil cooler in summer and warmer in winter. The aeration of the surface soil is better. The surface roots feed in the portion of the mulch that has turned into humus. The decay of the mulch supplies many valuable fertilizing elements. The research in this field has been rather extensive and is very favorable. It shows that large amounts of available potassium are found underneath old straw mulches as compared with adjacent cultivated land. In the Journal of the Amer. Soc. of Agronomy 30: 438-9 (1938), I. W. Wander and J. H. Gourley show that where there had been a heavy mulch for 22 to 38 years in a pear orchard, upon which no potassium had been added other than that supplied by the mulch, available potassium was very high to a depth of from 24 to 32 inches. On the other hand where chemical potash fertilizers have been applied for a period of ten years, very little downward movement of available potassium has been observed and yet straw contains only one per cent potassium.

(To Be Continued)

Potash Deficiency in Soils

BY SIR ALBERT HOWARD, C. I. E.

SINCE this war started there are many references in the agricultural press to the shortage of potash now that the supplies from Stassfurt (Germany) have been interrupted. If potash is really necessary, it is remarkable that little or none of this material was stored in anticipation of the present war which cast its shadow on the western world ever since Hitler began to tear up the Treaty of Versailles. All sorts of alternative sources of potash are now being explored, including flue dusts, to make good our supposed potash deficiencies particularly for potatoes and in vegetable and in fruit growing. Such supplies as exist are naturally very carefully rationed.

For some time since the Long Ashton Experiment Station near Bristol drew attention to the marked effect of dressings of potash on the yield of various fruit trees and to the effect of this material on growth and resistance to disease, I have been troubled by an uneasy suspicion that all is not well with our farming and fruit growing in this country, otherwise such a problem as potash deficiency would not exist. I could not help comparing these methods of fruit growing with those on the frontiers of India and in Central Asia—the original home of this industry—where for many centuries fruit has been grown successfully without developing any of the modern troubles and where such things as a potash deficiency, artificial manures, insecticides, fungicides, and germicides find no place. The fruit growing methods of the Orient have stood the test of time. Very different is the story of British large-scale fruit growing. Various difficulties were soon encountered. Crops are now only possible if the trees and bushes are deluged every year with poison sprays of various sorts to protect the fruit from pests and if the soil is stimulated by all manner of chemicals. But if we wander into some of the walled gardens of the great country houses and talk to the older generation of head gardeners in charge, we shall be shown out-door, wall, and greenhouse fruit of prime quality which have no need of poison sprays or artificials. The general results are even better than those to be seen in Asia for the reason that much greater care has to be taken of fruit trees in a cold and wet island like Great-Britain to overcome the handicap of climate. There must obviously be something wrong somewhere in commercial fruit growing in Great Britain or these differences would not occur.

What characteristics have fruit culture in Central Asia and in our country houses in common? How do they differ from large-scale, commercial fruit growing? If we could answer these questions, it might be possible to get to the root of this potash deficiency problem.

Fruit growing in Central Asia and in our old-world walled gardens have three characteristics in common:—

(1) Only a fraction of the total area is under fruit. This arrangement facilitates the rotation of crops

and the periodical resting of the land from fruit.

(2) Great attention is paid to deep cultivation, including soil aeration in some form or other. In this country our old gardens have been for generations well and deeply cultivated by hand labour supplemented by the work of many families of large, well-fed lob worms. In Central Asia fruit is almost always grown with lucerne, (alfalfa) the deep roots of which are excellent cultivators and aerating agents.

(3) Live stock and fruit always occur together. Our country-house gardens get all the muck they need. In the East the lucerne crop round the fruit trees is constantly top dressed with farm-yard manure.

These facts will, I think, begin to explain the potash deficiency met with in commercial fruit growing. Here the soil has been starved of potash simply because there are few or no animals connected with modern fruit orchards and little or no old-fashioned muck is used. Moreover, no provision has been made to keep the soil open by means of deep-rooting plants or by the sub-soiler. On the contrary, the natural agencies of a fruit orchard —the lowly earthworms—which both aerate the soil and enrich the surface with available potash by means of their casts are systematically destroyed every year by the use of artificials like sulphate of ammonia and by various poison sprays such as lime sulphur and arsenical washes.

As is well known, farm-yard manure is very rich in organic potash. Only when the soil is deprived of its manurial rights do we hear of a potash deficiency anywhere. It is, I think, obvious from the above considerations that the shortage of potash in British fruit growing must be a man-made trouble due to practices which have developed on a foundation of sand—the NPK mentality.

What is the best way of maintaining soil fertility and so of avoiding deficiencies in commercial fruit growing? The following letter from Southern Rhodesia, which has just reached me, suggests that freshly prepared compost is the solution. This material will give even better results than good, old-fashioned muck and will soon eliminate any shortage of potash.

Copy of a letter dated February 27th, 1944, from Mr. A. D. Wilson, Burnside, Bindura, to Captain Moubray, Chipoli, Shamva, Southern Rhodesia.

"I have just finished working out last year's returns on my strawberries. They confirm those of the year before and are as follows:

Area — 1½ acres; yield — 7,000 lb.; compost per acre — 10 tons. The effect of the compost has been remarkable in several ways: (1) the plants fruited for well over six months without a break, yet they remained healthy and full of vigour at the end of this long period; (2) the life of the plants has been extended for at least another season since composting began.

Bananas. The effect of compost on these has been perhaps the most marked of anything I have done. Bananas are not considered a commercial proposition in S. Rhodesia and for four years I worked away without using compost. Then I began to apply it—the change was remarkable. Year by year the plants grew larger, the bunches increased their yield till to-day I can expect bunches that carry 200 large bananas and more and have a flavour better, so the Chief Horticulturalist says, than any imported article.

Egg Fruit, or, as you will have it, Aubergines. Compost makes these

plants. They grow into bushes and the first crop usually carries a large quantity of fruit 3 and 4 lb. in weight.

Young berries & Boysen berries. I have not done enough with these plants to know how they will do commercially, but their growth with 25 lb. of compost each is a lovely thing to see.

I might go on endlessly about the effects of compost, but I will only mention paw-paws (*Carica papaya*) as another example of a plant that gives a remarkable response to compost. I gave them 50 lb. each.

One more small item: I have two apple trees four years old planted as an experiment. They gave me 50 apples each of good size and excellent flavour; compost again."

This Rhodesian experience agrees with my own at Blackheath and with that of numerous correspondents who have had the good fortune to inherit a worn-out soil and a number of derelict fruit trees covered with every possible pest and producing fruit of the poorest kind. When these apparently hopeless trees are manured with freshly prepared compost, the manner in which they gradually throw off their load of pests and of soil deficiencies as well, and produce fruit of the highest quality, is an educational experience of considerable value. It should be included in the training of all our future research workers. An intimate acquaintance with Charles Darwin's classic—*The Formation of Vegetable Mould Through the Action of Worms with Observations on Their Habits*, which was published in 1882—might accompany this item of their studies. Plenty of pest-ridden gardens exist waiting to be got into good fettle. The results, among other things, will suggest to our future experts and their instructors how fragile are the foundations on which the NPK mentality rests, and how absurd and how unnecessary are the methods of present-day plant protection.

I am convinced that the NPK mentality will have to be utterly discredited and destroyed before British agriculture, including gardening and fruit growing, can be rescued from the superficial investigations of the experiment stations and the glib patter of the vendors of artificial manures and of the poisons needed in plant protection. In two previous articles (*News Letter on Compost*, Nos. 8 and 9) I have thrown doubt on the need for phosphates. I am convinced the potash question is also a veritable mare's nest. That this view is correct can easily be put to the test by means of dressings of freshly prepared compost. In a following article I propose to deal with the nitrogen problem in British agriculture and to draw attention to some of the fundamental weaknesses underlying the current ideas on this item of our manurial programme.

If only some genius with the gift of words of a Cervantes would arise and pour the ridicule they deserve on our agricultural Experiment Stations and on our Ministries of Agriculture and Food, agricultural research and our food policy would collapse like a house of cards, and crop production and nutritional studies would be born again.

Hints For The Victory Gardener

This is the twenty-sixth of a series of articles by this author dealing with the cultivation of ordinary vegetables.

BERRY BUSHES

By ROGER W. SMITH

A GARDEN, even a good garden, is given permanence only when a few berry bushes or a patch of strawberries are added to it. The problem, you will quickly realize, is to fit these things into the garden without encroaching too seriously upon its space. The garden, therefore, should be examined with a critical eye, the surrounding hedges, weedy corners, fences, given a careful examination. Is there a small, unused strip of ground leading up to the garden or alongside the boundary line? Often these small areas cannot be conveniently cultivated as part of the garden, they may be extremely valuable for a place in which to grow controlled berry bushes.

Dewberry canes may be trained to cover a fence; blueberry bushes may be planted to replace a high, wild hedgerow, there are many other valuable arrangements. But at first it will probably be best if you limit your planting to a few currant and gooseberry bushes set, perhaps, in an unused, weedy corner of the garden. These are small and lowgrowing, heavy bearers of delicious fruits. Later you will be in a more experienced position to decide how other space may be used.

Of berry bushes you will naturally make your selection according to your own taste and the space to be used. As you know, gardening concerns itself with proper control over plant growth. The more limited the garden space, the greater the necessity for this control. In the growing of berry bushes control must be carried to its logical conclusion. The maximum of fruits for the minimum of space, calls for the greatest amount of skill in planting, training and pruning.

You consider currants first. Over three hundred years ago early gardeners ordered cuttings of red currants shipped to them from Holland. Today, you have many excellent varieties from which to choose both red and white, among them old standbys like Red Lake and White Imperial and many fine large-berried, disease resistant hybrids.

Currant bushes, as obtained from the nursery, should be set about four feet apart in the row. They will grow in spite of neglect and thrive with ordinary care. They prefer a rich deep soil and should be given an annual pruning after the third year. For fine large fruit, the bush should be kept down to about twelve canes. Canes two or three years old will bear fruit, those older than that have little value. Pruning should be done after the leaves have fallen. Currant bushes reach about three feet in height, they do not object to some shade and for this reason they are often grown commercially interplanted with grape vines in vineyards.

If a bushel or two of compost humus is incorporated with the soil at the place where the bush is to be set, and the area well watered and firmed at planting time, the bush will take root readily. However, a very old and very good practice is to mulch each bush regularly

with a heavy dressing of sawdust or tanbark if this material is available. Of course, a mulch of compost humus should be placed before this material is used.

Gooseberries are planted much like currants. The bushes are low-growing and come into bearing about the second year. As with currants they may be planted in a wild corner or used in the place of barberry to form a low hedge to mark the dividing line between lawn and garden. However, gooseberries prefer a rather cool, exposed site where many other plants would fail. They will tolerate some shade. Mulching with compost material overlaid with sawdust also benefits them. The bushes should be thinned and cleared of dead wood and excess growth each fall as with currants.

Mildew is a common complaint among some varieties of gooseberries but proper pruning and the heavy use of compost humus to promote health will usually overcome this weakness. However, if this complaint does break out because of an exceptionally damp season it may be quickly remedied by dusting the bushes with slacked lime and by sprinkling salt lightly upon the ground around the bushes. Gooseberries are available in types varying from Downing, green when ripe, and Poorman, red when mature.

But suppose you have a vacant, rather ugly fence. Dewberries (trailing blackberries) such as the Boysen and Lucretia varieties, are very vigorous growers and ideal for training to fence or trellis. The plants should be carefully set in ground well prepared and properly enriched with compost humus or well rotted manure and spaced about three feet apart along the fence.

When the swift growing canes are about six feet long the tips should be cut off. In the meantime, of course, the canes should be tied up loosely to keep them off the ground. And many of the smaller canes should be cut off at the ground level to throw the strength of the plant into the few canes you have selected for fruiting.

After fruit bearing, old canes should be removed and the newer ones, suckers, should be encouraged. Because of their tenderness to excess cold, trailing blackberries are usually given some protection by laying the canes on the ground and covering them lightly with evergreen branches or some similar rough material.

But suppose you prefer raspberries to the two-inch long berries of the cultivated dewberries; raspberries may be trained and grown along a fence in about the same manner. With raspberries you also have a wide choice of varieties. However, the choice between red raspberries and black or purple depends largely upon the type of soil in your garden. As a general rule if the soil is light and sandy the red varieties do best, whereas black and purple raspberries often flourish upon heavier, less suitable soils.

Both raspberries and dewberries appreciate a mulch made up of a mixture of mature compost humus, tan bark or sawdust, and hardwood ashes. Many good gardeners are firmly convinced that this material causes the plants to produce larger and better flavored berries. They also believe that with berry bushes a light sprinkling of salt over the mulch is beneficial. There would seem to be little doubt but what this practice tends to keep down surface weeds and perhaps make for easier cultivation.

Raspberry canes are usually pinced back when they are about three feet tall at which time they may be tied to their support. This

heading back causes the canes to send out fruit bearing laterals and makes their control easier. As with dewberries, it is best to limit the number of canes to a plant by cutting out all except four or five strong ones as they come up in the spring. Of course, all old canes which have fruited should be cut out in the fall. Tender varieties should be given some winter protection by a straw or hay mulch.

With raspberries you will be faced with such an array of fine varieties from which to choose that you will likely be bewildered. Latham is an old red favorite, Cumberland a good black, and Sodus an excellent purple. There are many excellent and delicious new varieties. Your handling of the plant will much depend upon the variety you choose. For example, the cane of the black raspberry is best pruned back in the spring to six or seven buds instead of three feet tall. Raspberries come into bearing the first year and if the plants are well cared for, a small planting will bear heavily for years.

Blackberries, too, may be trained to a fence but they are generally less easy to control. They tend very strongly to the bush form, demand more room than raspberries. But if you decide to use them Eldorado is a good sort. All the old canes should be removed after fruiting and the new canes pinched back to the desired height. In the spring after danger of frost is past and after tying the canes to their support, the laterals should also be pinched back by about one half their length. The plant should, naturally, be thinned to about five canes by cutting them off at ground level.

So much for the low hedge; currants and gooseberries, and fence covers. What about a substitute plant useful and fruitful as a high hedge. Of all the berry-bearing plants useful in making a high hedge, you will likely prefer the blueberry. Its racemes of waxy white blossoms during the spring, and the intense crimson of its foliage in the fall, make this plant a thing of beauty as well as utility. The newer varieties of this plant, the Atlantic, Pemberton, and Burlington, produce heavy crops of excellent berries so many times larger than those of the older types that they will astonish you.

If you decide to set out a few blueberry plants to replace a weedy hedge you will find it convenient to keep in mind some factors important to success. Blueberries generally are not self pollinating, so two or more types should be planted to insure pollination. The plants should be set three feet apart in the row and at about the same depth that they grew in the nursery. If you believe that the soil in your garden is not suited for their growth, that it is alkaline, this condition may be easily remedied by adding well rotted evergreen stumps, oak leaves, or acid peat moss to the compost material mixed with the soil before planting time. A plentiful supply of water should be available and the young plants well firmed.

Blueberries usually bear heavily the second year. The bushes should be pruned to prevent overcrowding, but one of the most important points in their culture is the maintenance of a very heavy mulch of leaves (preferably oak leaves) and compost around the plants at all times to hold adequate moisture near their roots. Blueberries are believed to require a very acid soil. With the older varieties this was probably true. However, some very large and successful plantings of the cultivated varieties have recently been made with an almost total disregard for this factor, and it seems

likely that this plant, as with so many domesticated plants, is gradually being bred away from some of the conditions natural to it in the wild state.

And then of course, there are strawberries. If you use only self-pollinating varieties, a single matted row of strawberries may be used conveniently as a border. Currants and gooseberries will grow in competition with grass and weeds, but you will have to guard the strawberry plants carefully against these.

Before setting out the plants the soil should be well prepared and enriched in such a way that it will not need much attention during the life of the planting, say three years. This is best done by digging into the soil a heavy application of compost humus or weed-free, well rotted manure, if compost material is not available in quantity.

Late in the fall the row should be covered with a deep mulch of long straw. This covering should be lightly raked aside in the spring to permit the growing plants to emerge but it should be left close alongside the row to keep the fruit free from contact with the soil.

But whichever plants you select, however small your planting—currants and gooseberries for jellies and jams, blueberries for pies, dewberries and strawberries for eating fresh picked—you will almost surely hear about some well tried, neighbor's way of growing them. It will be to your advantage to pay attention.

Just as some Indian tribes made a custom of placing a fish head beneath each hill of corn, so today many good gardeners make a ritual of planting a quantity of bones or bone meal around the roots of their berry bushes and of giving their plants a heavy mulching of hardwood ashes and rotted leaves.

Tests by modern agricultural scientists have shown the great value of many of these practices, especially the importance which organic mulches have upon root growth, and the damage often inflicted by the heavy use of inorganic unnatural chemicals.

In the planting and growing of these things you will come upon much that will interest and please you but most satisfying of all will doubtless be the knowledge that in this simple task of growing an ample supply of delicious berries, infinitely more flavorsome than any you can buy, you will be doing much toward safeguarding the health of yourself and your family through the generous addition of these delightful fruits to your daily diet.

Organic Fertilizer Directory

We are working on a plan to publish a little directory listing companies all over the United States that handle organic fertilizers, such as peat moss, phosphate rock, lime, dolomite, dried blood, tankage, bone meal, cottonseed meal, etc. Will our readers kindly help by advising us of concerns in their territory that handle such materials.

Organic Gardening—Emmaus, Pa.

Fish Food

By H. C. Haas

Part II

MAN'S control of the earth has had less effect on the "animal and plant" life of the oceans, the "flora and fauna" of the sea, than on the animal and plant life on land. Life on the sea is so different from that on land that we can hardly call it "animal and plant" or "flora and fauna". However that may be, there has been practically no feeding of the sea life of any kind with chemical fertilizers, known to ORGANIC GARDENING readers as "NPK", and no burning of organic matter growing in the sea. Sad to say, there have been one or two very recent small attempts to feed even sea life with chemicals, as brought out in Part I.

Furthermore, the organic wealth of the land has in large percentage been washed or poured into the oceans, not by any natural processes but through the acts of civilized man, so powerfully aided by machinery and fuel, of which we have become so proud. The largest and most serious loss has been claimed or established by "Friends of the Land" to be the loss by erosion during heavy rains, carrying our topsoil into the swollen rivers and thence to the sea. The gates were not opened wide for this major loss until the normal organic cover of the land was first largely removed in many other ways:—(1) thoughtless and indiscriminate burning, (2) annually repeated crop removal with inadequate organic return, (3) the killing of soil life with chemical fertilizers and poison sprays, (4) the destruction of animal wild life with gun, traps and poisons. We could think of more.

Another organic loss to the sea, perhaps not so large but amounting to many millions of tons annually, and one of the primary causes for the first mentioned loss, has been the fast growing flow of sewage from seacoast cities into the ocean. It has been only recently that attempts have been made to arrest this flow, not due to any sense of loss, but merely to avoid pollution of the bathing beaches.

WE DO NOT WANT ANY MORE LIKE THESE!

In the New York Herald Tribune for November 24th, 1944, on last page, is the story of four children ranging in age from three to eight years, one of whom had recently died of "lympathic leukemia". On that date doctors had given the other three only a few weeks to live, these three having the same or similar forms of cancer.

Neither of these two losses is necessary. Both can be ended, and with immense improvement in the

health of man, and with like improvement in the health of all other living creatures, animal and plant, large, small and microscopic, wild and domestic, in the air, on the surface and below the surface, which are necessary to, and a part of, man's existence.

With this great wash into the ocean there has been the discharge of poisonous chemical factory waste also, but the deplorable effect of this on ocean life or any other life has been made small by the vast volume of the ocean. This does not condone the crime.

It can be guessed that the seas must be rich in organic matter, though it must live with less oxygen and sunlight than land and air life. There is abundant evidence that fish food and sea plant life are generally as plentiful as ever and rich in certain vital properties that land life must have had primevally, and which it has been losing fast.

CANCER A GREATER KILLER THAN THE WAR!

163,000 Americans were killed by cancer during 1943 alone. On November 23rd, 1944 it was reported in Washington, D. C. that 117,453 Americans had been killed in action to about that date since the start of the war in all the armed forces on all the fronts.

Space does not permit even a listing of the many forms of sea life, ranging in size from the microscopic plankton, of which over fifteen thousand species of vegetable and animal nature have been classified with many more to be added, up to 150 ton whales. The plankton are densest near the land and near the surface. They are the food for the smallest fish, also some large fish, and the smaller fish are prey for large fish, largely carnivorous. The plankton population is often dense enough to change the color of the water. Where that occurs they can be caught in amount large enough to be seen on a net made of closely woven silk, in the form of a thin jelly like layer with a fishy odor. The plankton are an important link in the life cycle of the ocean. They live on the discarded waste and the remains of all other life there, just as soil life on land lives on the waste and remains of all creatures above ground. Civilized man is now throwing out an enormous food supply to the sea plankton.

The virtues of seaweed as a fertilizer have been much discussed. It is abundant and easily obtainable along our shores because its high value has not generally been known.

Dr. Leonard Keene Hirshberg in an article "America Must Learn to Farm the Sea" in the American Weekly, reprinted in Diet Digest, enlarges on the virtues of seaweed as human food. He states that the "Gulfweed" or "Sargassum weed", called such because so common in the Sargasso Sea, is a delicacy in Japan. Kelp, a monster seaweed, eliminates goitre where used for food because it is high in iodine, and a chief source of it. Sugared kelp stalks are used as candy on our Pacific coast. Dr. Hirshberg says there are 435 different species of edible sea plants that thrive in different oceans of the world, all rich in natural food minerals. But farmers everywhere will be interested in the use in the inedible parts of all seaweeds as vegetable organic return to land topsoil.

Special mention must be made of that hale and hearty man of ninety-three, told about in the January 1944 ORGANIC GARDENING, who hopes to live to the ripe old age of one-hundred-and-fifteen merely

by continuing his long established habit of eating fish and disdaining foods grown on land, which have been "improved for the worse" in increasing measure, while flounder has changed not a bit.

Examples can be multiplied to show how the land can be re-enriched by reclaiming what has gone to the sea.

A friend, with whom I was discussing Organic Gardening told me about the fish packing industry at Provincetown on Cape Cod peninsula, famed for fish. As with foods packed elsewhere, it has become the practice there to freeze the fish intended for human food and ship it frozen, on the "Birdseye" plan. The lean meat is carefully trimmed and cut into fillets. All the rest of the fish, the heads, tails, backbones, skin and entrails, is ground, cooked for sterilization, and suitably packed for use in feeding the foxes in the silver fox farm, for which it can bring a good price.

It is worthy of note that the skins of wild animals are the most desirable in the fur trade. Domestication brings about a lowering of vitality that cheapens the fur. There are certain medicinal oils secured from wild animals having curative properties unobtainable in oils from domestic animals. Wild animals live closer to nature in many ways, but, above all, they get food that has remained unchanged for many centuries.

The silver foxes at the farms would produce fur of inferior quality if housed and fed like domestic animals through enough generations. Well cared for, their pelts are marvelously beautiful. This fish food of theirs has all the requirements. In the bones they get the calcium lacking in the fillets. The fillets may be a less complete food. But both the waste and the fillets must have what most land produced meat has been lacking more and more—the vitamins, and other highly complex and intricate organic compounds that took nature millions of years to build.

Unconscious of its excellence, the farmers of Long Island have long used fish a great deal for fertilizing the soil, following methods, however, that can be improved. Most of Long Island's farm produce, of course, feeds the city of New York. Long Islanders catch in the rivers a small fish, too bony to eat, called the "alewife", swimming in from the sea to spawn. The Indians used to put a fish in each hill of corn. Long Islanders use the inedible horseshoe crab the same way. Composting all this and other sea food with seaweed and "trash" off the farms would be better. Fish placed directly in the ground, just like fresh animal manure, will eventually enrich the ground, but growing vegetables much prefer finished com-

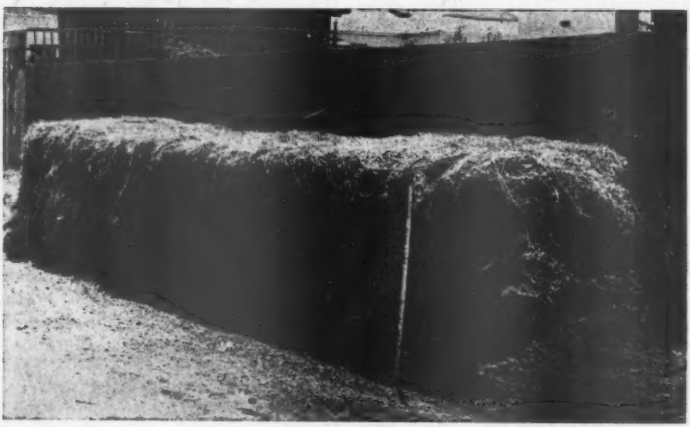
THE SENSE OF NEED IS THE MAJOR INCENTIVE TO DISCOVERY.

We are going to find the cure for cancer. During the first few days in Normandy after the invasion started three hundred Americans a day were killed, but during that same time four hundred Americans here at home died of cancer. That must not go on. We are going to find the cure for cancer because we so critically feel the necessity of it.

—Dr. Harry Emerson Fosdick in his radio address "Fresh Light on an Old Beatitude" broadcast Sunday afternoon, October 29th, 1944 from Station WJZ, New York City.

post, or humus. They want their food digested. Those who try composting will be amazed at the results, and the labor will be lessened, not increased. Many of us know that vitamins of high potency are regularly obtained in large quantity from certain organs in the bodies of shark, halibut and cod. Fish are the best source for many of the vitamins sold in pills. Cod liver oil was prized by our great-grandmothers long before vitamins were known.

Back Yard Compost Heap



A city compost heap placed between back fence and alley. Size, 20 feet long; 5 feet wide at base; five feet high when built. (Now settled to about 3 feet as indicated by yard stick) 3-inch layer of straw on sides and top to keep in moisture. Built by Herbert C. White, 16912 Brighton Ave., Gardena, Calif., in March, 1944.

The fence gives excellent protection from the north side.

$5.00 paid for every picture printed in Organic Gardening.

African Government Recommends Compost Farming

Extract from Reconstruction of Agriculture — Report of the Reconstruction Committee of the Department of Agriculture and Forestry of the Union of South Africa, p. 20, paragraphs 118 and 119.

118. *Plant and Animal Wastes.* In addition to sound methods of rotation, it is equally essential that all available plant and animal wastes be constantly returned to the soil in order to replenish its humus supplies and at the same time restore to it a substantial proportion of the plant nutrients taken up by the crops harvested. This is a fundamental necessity for the permanent maintenance of a high level of production and is all the more necessary in building up the fertility of old depleted lands. It is the logical and natural method of fertility maintenance that has been followed through the ages in older countries, although it has suffered considerable neglect during the last few decades since commercial fertilizers have come into wide use. Happily there is a growing realization all over the world today that the use of fertilizers in no way compensates for lack of soil humus and that the full utilization of farm wastes as sources of humus must form an integral feature of the system of land use as a whole, a fact that applies equally to dry land as well as to land under irrigation. All experience goes to show that by far the most effective method of returning farm wastes to the soil is in the form of well prepared compost. Alternative methods are by the direct ploughing in of untreated crop residues, by green-manuring, and the accumulation of animal manure in kraals or manure heaps for ultimate return to the land; but certain disadvantages attach to each of these alternatives as compared with the use of compost.

119. Under farm conditions the limit to the amount of compost that can be made is often set by the supply of plant wastes available. Crop residues alone will hardly furnish enough material and as a general rule main reliance has to be placed on old veld grass, mown for this special purpose. Where the supply of veld grass is also strictly limited, the only remaining alternative is to grow bulk-producing grasses (on such spare area as may be available and also along fences and on contours between lands) and as a source of compost material. On the basis of a meticulous costing of every operation involved, doubt is sometimes expressed as to whether compost-making "pays"; it is overlooked, however, that the making of compost can hardly be regarded as an optional matter in cropping areas and, moreover, that the normal farm routine can frequently be adjusted to include this activity with the employment of lit-

tle additional labour. In practice, the actual cost of compost to the farmer is not only small but should be amply recovered in the form of improved soil fertility. The time is rapidly drawing near when fruit and vegetable growers, who rely largely on supplies of kraal manure imported from other parts of the country will have to become self-sufficient in this respect and to produce their own requirements in the form of compost. This is the ideal at which every farm should aim, where crop production plays any significant role.

Toxic Ex-Orchard Soils

IN many states the soils in fruit orchards due to spraying with lead arsenate have become so toxic that nothing will grow there anymore, not even weeds. In the state of Washington alone there are about 15,000 such acres lying idle. The Agricultural Experiment Station at Pullman, Washington recently issued Bulletin No. 437 (March, 1944) entitled *Vegetable and Small Fruit Growing in Toxic Ex-Orchard Soils of Central Washington.* In it there is outlined a plan for restoring such land to be used for growing vegetables and small fruit, by a process of using chemical fertilizers, cow manure and plowed under cover crops.

This booklet and its ill-contrived plan shows an astonishing disregard for the safety of the public health. Not a word in it mentions that angle of the problem. Yet it is a known fact as was mentioned by Professor Firman E. Bear of Rutgers University in a letter that "there is abundant evidence that plants growing on soils that have been treated with arsenates contain more arsenic than do the same species when grown on untreated soil." Lands such as this should be condemned as a food-raising medium, and designated as sub-marginal to be used for producing non-food type crops.

Compost And Roses

By ROGER W. SMITH

MOST gardeners grow a few roses, often without too much success. Their best plants are poor specimens when compared with the flawless plants produced by the rose growing experts. How do these expert rose growers obtain such fine results?

First, let us see what the average gardener does when he plants a few roses. He knows that roses require a good deep loam, rich and well drained, so he digs out the bed to a depth of about three feet, breaks up the subsoil with a pick, and lays down broken stones, bricks, etc. to a depth of about one foot. Over this he places a layer of well-rotted horse manure. If the roses he wishes to plant are Teas he knows that they will require a rather light, sandy soil. He knows that Hybrids do best in soil containing some clay. Therefore, he usually pulverizes the removed soil and sods and mixes with them some sand and leaf mold to lighten the mixture—or clay to make the mixture heavier, as the case may be—adds some well-rotted horse-manure to the mixture, and fills in the bed so that it will be level after it has settled. In the meantime, of course, setting out the plants. More often than not his roses are mediocre and afflicted with plant disease.

What method does the successful rose grower follow? He takes care of drainage and builds his bed in much the same manner. But his materials differ. He usually begins by composting certain substances. He has very definite ideas about what these substances should be.

In his composting the rose expert aims at getting very definite results. He believes that soil for rose culture should be clayey but friable enough to be easily pulverized. So he selects good heavy clay turf, often stripped from a rich meadow. He has found that when this material has been broken down by composting it produces a humus that is open and porous enough for easy root action.

He builds his compost heap by arranging alternate layers of sods and cow manure, two parts of clay turf to one part of cow manure. He hates to have to substitute horse manure, but will do it if necessary. The heap is moistened during dry weather. Be sure to correct acidity by applying a medium sprinkling of lime with the compost. Not much emphasis is placed upon heating or fermentation although the heap is occasionally turned. From the organic gardening viewpoint his method of composting is rather inefficient. The material is broken down rather slowly. But it is a step in the right direction. If climatic conditions allow, the rose expert likes to arrange his compost in the winter, he believes that newly formed but properly matured compost humus—not over six months old—is best.

Where the ordinary gardener simply pulverizes the soil removed by digging, mixes it and returns it to the bed, the expert discards the removed material altogether and replaces it with specially composted humus. This is a point worth noting for upon it depends much of the success of the expert.

Often the expert also uses several other types of composted materials, each formed for a different and specific purpose. His methods of com-

posting may not be perfect but he has a deep understanding of the true value of compost humus. The humus which he is to use in his greenhouse benches, hot beds, flats, etc. is made for that purpose. For this he secures rich turf and stable manure. Here again he follows the alternate layer plan of composting but carefully varies the amounts. For example, he uses about three parts of horse manure to one part of sods to produce a humus suitable for fast growing, succulent plants, but greatly reduces the amount of manure if he wishes to produce a humus suitable for stocky, slow-growing plants such as cabbage, etc.

The rose experts methods are a big improvement over those of the ordinary gardener. They are methods worked out through generations of practice. They have deep significance for the organic gardener. And considering the expert, the ordinary gardener will discard all soil, sods, removed at planting time and replace it with properly composted humus. Just why does this method tend to promote healthy plant growth?

To begin with it surrounds the roots of the plant with an easily penetrated humus, rich in natural plant nutrients. It offers exactly the right condition for proper growth. Not only is root growth encouraged but the mycorrhizal association is also encouraged without which the roots system is unable to ingest much valuable nutrient material.

The rose expert seldom cultivates his plants unless the bed has been badly trampled, even then the cultivation is as shallow as possible to avoid root injury. He prefers to mulch the plants. Here he often turns again to composted material. During periods of drought he increases the depth of the mulch after applying a mixture of cow manure and water.

Plant disease sometimes bothers even healthy roses. Black spot, caused by a fungus, is most destructive during summer months. The infection overwinters in fallen leaves. A thorough cleaning up in the late fall will often do much to prevent serious attack the following summer. Pruning is often helpful. Strong plant growth may be brought about by cutting back and in persistent cases it is sometimes necessary to cut the plant back and force it to start over again with new clean foliage.

Powdery mildew is prevalent wherever roses grow. This fungus produces grayish or whitish spots on leaves and buds. Its spread is encouraged by sour soil, poor air drainage, matted growth, overlapping leaves, and "soft" foliage. This condition usually calls for a thorough pruning and the encouraging of open sunshine and currents of cool fresh air which tend to harden the foliage and bring about a certain amount of mildew resistance. It is because rose experts have found that artificials cause rapid growing "soft" foliage that they seldom use them.

Roses are also much subject to attack from nematodes (eelworms). However, these seldom worry either the rose expert or the organic gardener because nematodes do not thrive in soils rich with composted organic humus.

Some climatic conditions favor the growth of roses. And the gardener will do well to bear in mind that almost all types of roses have been bred so long and intensively by plant breeders that they are rather far removed from their wild ancestors. They exhibit all the weaknesses that follow in the wake of much inbreeding, backcrossing, etc.

Phil Zimmerman and His Flower Seeds

By MARGARET WHITTEMORE

Reprinted from Nature Magazine

"IT was not a fortune, but a seeming misfortune, that brought me the realization of a lifetime dream," declares Phil E. Zimmerman, Spanish War veteran of Topeka, Kansas. When, in 1932, a motorcar crash ended his business career as State hotel inspector, he was given the choice of spending the rest of his life in a veteran's hospital or living out of doors. Having been a flower lover since childhood, he chose the latter alternative and began the cultivation of a plot of ground, eight by eighty feet in extent, on the south side of his home. This garden has not only brought health, countless friends and unbounded satisfaction, but has inspired hundreds of other people to find joy in flower-raising.

An important part of Mr. Zimmerman's hobby consists in giving away flower seeds and plants. During the past five seasons he has distributed more than 10,000 packages of the seeds of new and choice flowers, all grown in his garden. Hundreds of potted plants for winter blooming are given to friends each spring and autumn. Cuttings from flowering shrubs are first well started and then given away.

On Lincoln's birthday he presented each member of the Kansas Legislature, the Governor, his office staff and other high employees with a garden of flowers, comprising some 900 packets. Mrs. Alfred M. Landon, Mrs. Harry Woodring, the Governor's wife, and others rely almost wholly on his judgment regarding the selection and care of garden flowers.

Since federal regluations forbid shipment of seeds from uninspected gardens, Mr. Zimmerman distributes his packages at meetings and through organizations. Hundreds of people come to his home when Topeka papers tip them off that seeds "are ripe"; some (before gas rationing) driving as far as 200 miles to get them.

Scores of youngsters, black and white, have been given seeds and plants and encouraged to grow little gardens. A bad child, Mr. Zimmerman declares, is one who has never made the acquaintance of flowers. To a juvenile judge he proposed an idea that he sentence some charges to him to start new gardens. The children in his own neighborhood for twenty blocks around have received specimens of his best growing plants, and, incidentally, gained a new and wholesome appreciation of property rights.

As a booster of the "More Pants in the Garden" movement, Mr. Zimmerman is leading men in a friendly invasion of the women's garden club territory, and proving that men who grow flowers are not sissies. It is unnecessary for one to be born with a green finger, he declares, or to know the botanical names of common garden flowers. A couple of standard seed and nursery catalogs will give valuable information. After the seeds are

planted according to directions, an occasional tickling of the earth with hoe or rake, and from then on the gardener will coast on his own momentum.

"Deep in the heart of every true flower lover," he says, "lurks this thought: 'It is my wish,, my hope, my prayer, that I may leave this world just a little more beautiful than I found it.'" On every general packet Mr. Zimmerman puts out is the following quotation from Abraham Lincoln: ". . . die when I may, I want it said of me by those who knew me best, that I always plucked a thistle and planted a flower, when I thought a flower would grow."

Next to war bonds, the best investment on earth is the time and energy spent by a citizen in beautifying his home environment, Mr. Zimmerman believes. "Those patriotic citizens who so successfully engineered the Victory Garden movement," he declares, "have unconsciously done the spade work for any future beautification program. They proved to hundreds of novices that they can grow things; that things will grow for them if given a little care or attention. Having learned that, it will be but a natural evolution for them to go in for flowers in 1945. This will augment, rather than conflict with, the vegetable garden program."

A few years ago Mr. Zimmerman bought a new home where he now cultivates a plot of ground containing 7100 square feet. Six years back it was pure basement clay. One hundred varieties of flowers, mostly annuals, beautify the place during the summer months. From December to February Mr. Zimmerman spends his time packaging the seeds for his hosts of friends. Last year he distributed some 2500 packets, using for the purpose old envelopes, scrap paper, and such, and a quarter-mile of adhesive tape. In mimeographing the labels he incorporates appropriate slogans, such as "Love me, love my flowers."

While everything is given away, and nothing sold, the adventure has yielded rich dividends. Mr. Zimmerman's health has improved and he has forgotten his troubles. "Don't pet your hard luck," he advises. "The more attention you give it, the longer it will follow you." A friend of his who is also regaining health through work with a garden is quoted as saying, "A flower in the ground is worth two in your hand."

In 1941 Mr. Zimmerman gave a bushel of hollyhock seed, and other varieties, to the State Highway Department for the beautification of Kansas roads and thoroughfares. He induced a friend to gather and donate two more bushels. The idea took on and many others contributed. He supplied Angel's Trumpet seeds to beautify the grounds of Winter General Hospital in Topeka, a hospital for world war veterans.

Two morning glories, which he developed from Japanese stock, he calls "The Glory of Kansas" and "Helen Gould." The former has a flower five inches in diameter, red with a purplish tinge, and silver leaves. The "Helen Gould" is a rare crimson morning glory, the only one of its kind in America. It was named for the "Angel of the Spanish-American War." Many soldiers received from her hands their first hope of comfort, recovery, and a safe return home. Mr. Zimmerman says that she was instrumental in saving his life.

"Zim," as he is called by his fellow-townsmen, is a civic booster with a reputation for starting things and then getting them done. While serving as State hotel commissioner

he founded the National Society of Long Fellows. That was in 1927. Applicants for membership were required to measure at least six feet and one inch in their shoes. Phil Zimmerman is himself six feet, three inches tall.

The organization of Long Fellows worked to promote the comfort of the tall man through longer beds; long bathtubs; higher awnings, signs, ceilings; longer Pullman car berths. Much good was accomplished; hundreds of hotels from coast to coast being equipped now in the Long Fellow mode. Auto factories adopted seat adjusters. Furniture companies produced oversize pieces, and clothiers recognized the tall man in making garments. Style alterations were made to aid the tall man.

Even more far-reaching in its effects, according to Mr. Zimmerman, has been his flower hobby. It has resulted in world-wide contacts. His seeds are now growing in Alaska, Manila, Hawaii, the Canal Zone, equatorial Africa, and even in the garden of an ex-President of Cuba. When the Japanese took Hong Kong, there were twenty beds of Zim's flowers growing in the yard of one of the finest Chinese homes there. Like Johnny Appleseed, he is represented in every state, territory and possession of the United States, and is responsible for from two to twenty-five gardens in each of the 105 counties of Kansas.

Shell-Backed Insects

IN the September, 1944 issue of the Eastern Fruit Grower appears a startling item regarding the ways of insect life in the apple orchard. Dr. Walter S. Hough, entomologist of Winchester, Va. Research Laboratory says, "Growers unwittingly are insect breeders as well as fruit producers," and that insects are setting up a tolerance to spray poisons.

"For example," says the Eastern Fruit Grower, "he said that they have raised one strain of apple worm in the laboratory that requires from 30 to 50 pounds of lead arsenate to the 100 gallons of water to destroy. The normal amount used in spraying is three pounds per hundred gallons."

Reader's Correspondence

ACCUMULATION OF MATERIALS

Many readers have asked us what to do about making a compost heap when there are only small quantities of materials available daily. In an English magazine called "Health For All" we recently saw in the Gardening Department a description of a method used by the author, Eleanour Sinclair Rhode. Here is how she handled the situation:

"It is essential to run compost heaps according to some sort of time-table. If you have only one compost heap then it is still more important. We have only one in our home garden (i. e., apart from those in the nurseries). Owing to shortage of labour, we cannot do the turnings that are the ideal, and so we run this one heap for six months, i. e., piling on every day weeds, garden rubbish, vegetable refuse from the kitchen, the cleanings of the poultry-house, slops from the house being poured over every day. The heap is made according to Sir Albert Howard's method, i. e., six inches green rubbish, two inches manure, light sprinkling of soil, light sprinkling of lime and then green rubbish, etc., again. As it is manifestly impossible to spread layers when all this stuff is thrown on daily, we divide the heap (mentally) into three portions and then two days all the stuff is heaped on one end, two days in the middle, and two days at the end. This assures liquid manure, etc., being evenly distributed.

"Health For All readers will be interested to note that soil is fed with compost (the perfect combination of foods for the soil) made in just the same proportion as we humans should eat our food, i. e., three times as much vegetable matter as nitrogenous matter."

We believe that the best solution to a situation where much material is not available at one time is to make a compost box with spaces between the boards on the sides to permit aeration. In this way, smaller amounts of material are required because the box is usually only four feet square. After each working, the heap will be covered in the box with burlap or canvas or wooden boards. Burlap is the best because it permits the rain to soak through.

—o—

NEW ZEALAND BOX

Dear Mr. Rodale:

I am very much interested in the New Zealand Compost Box you describe in the September issue.

Will you please advise what treatment I can give the wood to preserve it. Would a wash coat of cement be O. K.?

Edw. F. Bungeroth
E. Northport, L. I.

Answer

Dear Sir:

We have painted our New Zealand box with linseed oil, but would not recommend any other regular paint or creosote. We have heard it said that new cement kills bacteria and, therefore, we would hesitate to recommend a wash coat of cement.

LEAVES—WALNUT

Gentlemen:

Can you use walnut leaves, or are they injurious to the soil on account of the oil in the leaves?

J. E. Bairos,
Pleasanton, Calif.

Answer

Dear Mr. Bairos:

It is known that the roots of the Walnut Tree as well as the husks of the walnuts themselves give off a toxic substance, which is poisonous to other fruit trees in the vicinity as well as to some grain crops and tomatoes. It is possible that the leaves may contain some of this substance as they are very oily. It might, therefore, be advisable not to use Walnut Tree leaves in compost heaps that are going to be used for raising food crops.

—o—

GREEN MATTER—QUALITY

Dear Sirs:

I am interested in raising wheat of high mineral content, of better protein quality; in other words wheat of complete high biological value.

Alfalfa is rich in minerals and other valuable elements. Therefore it occurred to me that if green alfalfa were used liberally together with weeds, grasses and other composting materials in making humus, we would enrich the soil even to greater degree, than when the alfalfa were left out. Is this correct? Further I believe that the time required for composting will be reduced, is this correct?

A. Heinrichsmeyer,
St. Louis, Mo.

Answer

There is no question that the quality of the green matter has a great deal to do with the quality of the finished compost. Chinese farmers are aware of this and they grow clover crops especially for the purpose of being harvested and with manure used in the compost heap. We have done the very same thing this summer and have taken part of our alfalfa crop and composted it. This will be reflected in better wheat.

As to whether this will hasten the decay of the compost heap is a question. I do not know of any such results obtained. Usually it should take three months to make compost according to the Sir Albert Howard method, but in four months, it certainly should be finished.

—o—

COMPOST

Will a compost top dressing the first year of application have appreciable effect on the quality of wheat, especially if one could not put the dressing on sooner than say 2 months before harvest?

Answer

There is no question that the very first application of compost will improve the quality of your wheat, but, of course, putting it on only two months before harvesting could not possibly help much as far as the current crop is concerned.

—o—

NEMATODES

Dear Sirs:

For about 12 years I have had a

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THOS. J. BARRETT,
Earthmaster Farms, Box C-10,
Roscoe, Calif.

open ground. Secondly, this pit acts as a reminder. We have a rule that it must be completely filled up every fall and then used during the next season in our various compost heaps.

—o—

ORGANIC GARDENING CLUBS

Dear Mr. Rodale:

I have been reading your magazine on Organic Gardening for some few months. I am following Sir Albert Howard's method on compost. I think you have a wonderful magazine. I would not wish to part with each issue for any money. You might wish to know that several of us men in this community are forming a club. The name we will give our club is Organic Gardening Club of Woolwich, Maine.

This last summer, was the first year that I used compost. I used part of my land on compost and the other part on fertilizer. The compost is wonderful. No more chemical fertilizers for me or other poisons.

I would appreciate it very much to hear from you and if there is any information you can give me as to the welfare of our club, I would highly appreciate it.

Harry E. Muckler,
Woolwich, Maine
R. F. D. No. 1.

Answer

Dear Mr. Muckler:

Thanks very much for your splendid letter. Compost clubs have been formed in New Zealand on an extensive scale, and I have noticed one thing, that they always have public demonstrations showing how a compost heap should be made. That is how they enlarge

their membership, and also spread the good work.

We are going to print your letter in ORGANIC GARDENING. Perhaps that will encourage other people to start similar clubs. If you can get your membership large enough you might be able to attract speakers. We will give this matter thought, and if you will keep in touch with us there may be various ways we can help. In the past, several of our readers have advised us that they have read articles from our magazine at various general garden club meetings.

—o—

SEEDS AS HUMAN FOOD

I have read that in China the watermelon is raised for the seed which the Chinese eat. Do you think that watermelon seeds contain any food value?

Herbert Hamilton,
Bucyrus, Ohio.

Answer

I am glad that you asked this question. Seeds of various kinds should take a prominent place in our dietary. For example, it is said that the seeds of an apple contain more nourishment than the rest of the apple combined. The reason for this is quite apparent. The one big desire of nature is to perpetuate the species and this perpetuation is performed by the seed. Therefore, Mother Nature stores in the seed the most vital organic elements of the plant. It has been shown that the seed is given preferential treatment by the plant insofar as organic matter and minerals are concerned. That is why, for example, sunflower seeds are so important for the diet. They are just packed full of organic vital nourishment.

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you swallow seeds, you would get appendicitis. I have been doing this for years and I do not think that it could have any such effect. When I eat an orange, for instance, I crush up the seed with my teeth, but do not swallow it whole. In eating grapes, I swallow the seeds after chewing and breaking them up. I do the same with apple seeds, but always try to crush them up with my teeth. I have never tried watermelon seed, but if you could break it up with your teeth, I am sure there would be no harm, but that you would gain enormously by the vital elements in the seed which nature constructed in such a way as to enable the new little seedling to fend for itself until it can gather food elements from the soil.

The Hunzas of India, one of the healthiest races in the world, who do not get cancer or any of our civilized diseases, depend a great deal on apricots for their food. They have a way of breaking open the stony seed and eating the insides. They then use the stony part as a fuel. Perhaps we could find some way of eating the inside part of a fruit by getting in some manner to the stone. All of these seeds you can readily see would contain much more nourishment than leaves or stalk. The Russians use the seed of the squash, which is somewhat similar to the watermelon in size and it is quite a popular food there. They sometimes roast and salt it. I feel that these seeds should be eaten without cooking. I purchased some dried and salted squash seeds sometime ago in a Philadelphia nut shop.

I have been studying this subject for the last few years and am going to discuss it in more detail as my editorial in the March issue. (Confidentially, I am writing a book called "Seeds as Human Food",

which will be published in 1946. They are the forgotten foods.)

—o—

SEAWEED

Dear Mr. Rodale:

How should seaweed be handled in making compost?

Robert Scanlon,
Far Rockaway, N. Y.

Answer

Dear Mr. Scanlon:

Seaweed decays readily. Be sure that you wash all of the salt off it. The action of salt on soil is rather sharp. It is very interesting to note that the Germans who have allowed the ocean to come in and flood much soil in Holland have set that land back at least five years. Because of the salts in the water no crop will be able to grow successfully for at least that length of time. Seaweed is a wonderful fertilizer, but we should caution you about giving it a thorough washing.

—o—

STORAGE OF VEGETABLES

Dear Mr. Rodale:

I stored my organically raised potatoes in the cellar beside some I had bought which were raised on fertilizer and had been sprayed regularly. My own potatoes now have inch-long sprouts on them and the other potatoes have none. What is the reason for this? Could it be because the organic potatoes have more vitality than the others enabling them to sprout even under adverse conditions?

Herbert Hamilton,
Bucyrus, Ohio.

Answer

Dear Mr. Hamilton:

What you say may be true. We have stored organically produced potatoes since last August and they have not sprouted yet. We keep them in a temperature of about 45 degrees in a cellar with dirt walls and dirt floors. It has been stated by the government that in experiments where apples are stored next to potatoes that there is a gas given off by the apples which has an inhibitory influence over the potatoes and prevents them from sprouting.

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